APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,025	12/11/2001	Stephen Francis Bush	14876	6341

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EXAMINER
RIVERO, MINERVA

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 April 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-6</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-16</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   In the Remarks filed 4/21/05, in response to the Office Action mailed 1/19/05,

Applicant amended claim 6 and submitted a declaration pursuant to 37 CFR 1.131.

Response to Amendment

2.   The declaration filed on 4/19/05 under 37 CFR 1.131 is sufficient to overcome

the Austen-Brown reference.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong

(US Patent 5,384,892), in view of Farmakis *et al.* (US Patent 5,714,948), further in view

of Kurami *et al.* (US Patent 5,208,750).

Regarding claim 1, suggests a dialog processing system

and method comprising

a control system that records a state of the UAV (Col. 7, Lines 32-44);

a recognition unit for analog speech input data (Col. 4, Lines 42-46) and

an interpretation unit dynamically linked to the control system and linked to the

recognition unit for interpreting the input data (Col. 2, Lines 45-50) and

whereby the interpretation unit utilizes UAV state data to interpret the input data

to generate appropriate output data (Col. 2, Lines 58-68; Col. 5, Lines 18-25; *active*

speech rules depend on detected events, Col. 7, Lines 32-44).

However, Strong does not explicitly disclose but Farmakis *et al.* suggest a

recognition unit for recognizing text (*text is generated and displayed, and incoming*

information is identified and forwarded to appropriate computer, Col. 13, Lines 49-62);

and a response unit linked to the control system and linked to the interpretation unit for

producing text or audible analog speech output data (*transmitted information may be*

text or synthesized voice, Col. 13, Lines 33-39; *generated text*, Col. 13, Lines 49-50).

Therefore it would have been obvious to one ordinarily skilled in the art at the

time of the invention to supplement the teachings of Strong with a recognition unit for

recognizing text and a response unit for producing text and audible analog speech data

as suggested by Farmakis *et al.* in order to allow the control system to interact with the

user in multiple ways, according to the situation. Enabling the recognition of text, and

the production of text and speech allows for a versatile system that can be operated by

a handicapped person (mute or hearing-impaired).

Moreover, neither Strong nor Farmakis *et al.* explicitly disclose the system state is a state of a UAV system.

However, Kurami *et al.* suggest that a state is a state of a UAV (*unmanned vehicle controlled remotely through speech commands*, Col. 7, Lines 47-62; see Abstract). It is common practice in the art to enhance a system's versatility by including a speech recognition interface for control of the system.

Therefore it would have been obvious at the time of the invention to supplement the combined teachings of Strong and Farmakis *et al.* with having the system state be a state of an UAV, as suggested by Kurami *et al.*, since it is common practice in the art to include a speech recognition interface to provide useful, alternative means for control of the system.

5.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong (US Patent 5,384,892) in view of Farmakis *et al.* (US Patent 5,714,948), further in view of Kurami *et al.* (US Patent 5,208,750), as applied to claim 1 above, and further in view of Damiba (US 2002/0169613).

Regarding claim 2, the combined teachings of Strong, Farmakis *et al.* and Kurami *et al.* do not explicitly disclose the interpretation unit utilizes natural language processing.

However, Damiba suggests the interpretation unit utilizes natural language processing ([0003], Lines 1-9; *object can represent an aircraft*, [0200], full paragraph).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong, Farmakis *et al.* and Kurami *et al.* by having the interpretation unit utilize natural language processing. Natural language processing is a desirable attribute in an automatic speech recognition system (see Damiba, [0003]) and adds flexibility to the system by avoiding the need for memorized stylized commands.

6.   Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strong (US Patent 5,384,892), in view of Farmakis *et al.* (US Patent 5,714,948), further in view of Kurami *et al.* (US Patent 5,208,750), as applied to claim 1 above, and further in view of Schoneburg *et al.* (US 2002/0133347).

7.   Regarding claim 3, the combined teachings of Strong, Farmakis *et al.* and Kurami *et al.* do not disclose but Schoneburg *et al.* suggest the voice interpretation unit comprises a dialog manager that controls which sub-dialog is active by transitioning from one dialog state to another (*managing the context of the dialog*, [0078], Lines 2-5; *regulating the transitions of the states of the system*, [0161], Lines 3-4).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong, Farmakis *et al.*

and Kurami *et al.* with a voice interpretation unit that comprises a dialog manager that controls which sub-dialog is active by transitioning from one dialog state to another as suggested by Schoneburg *et al.* in order to execute a valid dialog between the system and the user.

8.   Regarding claims 4 and 5, the combined teachings of Strong, Farmakis *et al.* and Kurami *et al.* do not explicitly disclose but Schoneburg *et al.* do disclose the input data is dynamically merged with UAV states selected from the group consisting of current states, past states and predicted states (*considered rules*, [0164], Lines 1-3; *past context*, [0162], Lines 14-22; *current state*, [0165], Lines 5-8; *eliminating extraneous possibilities*, [0082], Lines 1-3) and the input data is dynamically merged to with past, present and predicted states of the UAV ([0081], full paragraph; *preprocessing the input*, Fig. 10; *considered rules*, [0164], Lines 1-3; *past context*, [0162], Lines 14-22; *current state*, [0165], Lines 5-8; *eliminating extraneous possibilities*, [0082], Lines 1-3).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong, Farmakis *et al.* and Kurami *et al.* by having the input data dynamically merged with UAV states selected from the group consisting of current states, past states and predicted states and dynamically merged with past, present and predicted states of the UAV, as suggested by Schoneburg *et al.* in order to evaluate the input data in the appropriate context. Using a discourse control mechanism that considers past and present states of the

system allows the control system to provide the best possible responses to a particular

situation, as taught by Schoneburg *et al.* ([0101], full paragraph).

9.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong

(US Patent 5,384,892), in view of Farmakis *et al.* (US Patent 5,714,948), further in view

of Kurami *et al.* (US Patent 5,208,750), as applied to claim 1 above, and further in view

of Cope *et al.* (US 6,529,866).

Regarding claim 6, the combined teachings of Strong, Farmakis *et al.* and

Kurami *et al.* do not disclose but Cope *et al.* do disclose

the interpretation unit is limited to a predetermined air traffic control specific

vocabulary (*interpretation*, Col. 1, Lines 57-59; *air traffic control commands*, Col. 5,

Lines 54-60).

Therefore it would have been obvious to one ordinarily skilled in the art at the

time of the invention to supplement the combined teachings of Strong, Farmakis *et al.*

and Kurami *et al.* by having the interpretation unit limited to a predetermined air traffic

control specific vocabulary in order to avoid supplying the interpretation unit with

unnecessary vocabulary that would slow down its response time.

10.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong

(US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750).

Regarding claim 7, disclose a dialog processing method comprising

detecting commands (*selecting the correct command*, Col. 6, Lines 26-30);

interpreting the commands in context of dynamic UAV state information (Col. 2,

Lines 58-68; Col. 5, Lines 18-25; *active speech rules depend on detected events,* Col.

7, Lines 32-44; Col. 6, Lines 34-36); and

producing responses in accordance with the interpretation of the detected

commands (*system responds in a predetermined way*, Col. 13, Lines 29-32).

However, Strong does not explicitly disclose but Kurami *et al.* suggest that the

state is a state of a UAV system (*unmanned vehicle controlled remotely through speech*

commands, Col. 7, Lines 47-62; see Abstract). It is common practice in the art to

enhance a system's versatility by including a speech recognition interface for control of

the system.

Therefore it would have been obvious at the time of the invention to supplement

the combined teachings of Strong and Farmakis *et al.* with having the system state be a

state of an UAV, as suggested by Kurami *et al.*, since it is common practice in the art to

include a speech recognition interface to provide useful, alternative means for control of

the system.

11.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong (US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), as applied to claim 7 above, and further in view of Lewis *et al.* (2002/0161584).

Regarding claim 8, the combined teachings of Strong and Kurami *et al.* do not disclose but Lewis *et al.* do disclose natural language processing methods are used to interpret the commands (*user can express commands using natural language*, [0007]).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement combined teachings of Strong and Kurami *et al.* with natural language processing methods to be used in the interpretation of commands, as disclosed by Lewis *et al.* in order to allow UAV dialog processing system to receive spontaneous, naturally spoken commands from the ground station.

12.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Strong (US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), as applied to claim 7 above, in view of Schoneburg *et al.* (US 2002/0133347).

Regarding claim 9, the combined teachings of Strong and Kurami *et al.* do not explicitly disclose but Schoneburg *et al.* suggest the state information includes current states, past states and predicted states (*considered rules*, [0164], Lines 1-3; *past*

context, [0162], Lines 14-22; *current state*, [0165], Lines 5-8; *eliminating extraneous possibilities*, [0082], Lines 1-3).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong and Kurami *et al.* by having the UAV state information include present states, past states and predicted states, as suggested by Schoneburg *et al.* in order to evaluate the input data in the appropriate context. Using a discourse control mechanism that considers past and present states of the system allows the control system to provide the best possible responses to a particular situation, as taught by Schoneburg *et al.* ([0101], full paragraph).

13.   Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strong (US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), as applied to claim 7 above, in view of Chapados *et al.* (US Patent 6,356,869).

14.   Regarding claim 10, the combined teachings of Strong and Kurami *et al.* do not explicitly disclose but Chapados *et al.* do disclose the interpreting step (*conversation analysis*) is executed as a finite state machine (Col. 5, Lines 57-59).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong and Kurami *et al.* by having the interpreting step executed as a finite state machine in order to efficiently

use system states as a basis for evaluating the dialog and producing appropriate

responses.

15.   Regarding claim 13, the combined teachings of Strong and Kurami *et al.* do not

explicitly disclose the interpreting step uses a grammar to construct dialogs while the

UAV is in flight.

However, Chapados *et al.* suggest interpreting the step uses a grammar to

construct dialogs real time (*discourse management and natural-dialogue speech

application, Col. 3, Lines 63-65*).

Therefore it would have been obvious to one ordinarily skilled in the art at the

time of the invention to supplement the combined teachings of Strong and Kurami *et al.*

by having the interpreting step use a grammar to construct dialogs while a UAV is in

flight, as suggested by Chapados *et al.*, in order to allow the UAV to have a dynamic

dialog processing capability to receive spontaneous, naturally spoken commands and

produce the appropriate responses.

16.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable Strong (US

Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), further in view of

Chapados *et al.* (US Patent 6,356,869), as applied to claim 13 above, and further in

view of Stammler *et al.* (US 6,839,670).

Regarding claim 14, the combined teachings of Strong, Kurami *et al.* and Chapados *et al.* do not disclose the interpreting step uses a learning process to add unknown commands to a list of possible commands.

However, Stammler *et al.* do disclose the interpreting step uses a learning process to add unknown commands to a list of possible commands (*additional speech commands*, Col. 4, Lines 24-29).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong, Kurami *et al.* and Chapados *et al.* and use a learning process to add unknown commands to a list of possible commands, as taught by Stammler *et al.*, in order to allow the system to be updated according to evolving requirements.

17.   Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable Strong (US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), as applied to claim 7 above; in view of Jenkins (US Patent 4,725,956).

18.   Regarding claim 11, the combined teachings of Strong and Kurami *et al.* do not explicitly disclose but Jenkins suggests the commands may initiate from the UAV (*autopilot*, Col. 3, Lines 33-36).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Strong and Kurami *et al.*

with commands initiated by the UAV as suggested by Jenkins in order to allow the UAV

to accomplish its mission without needing more real-time control from the ground or

other vehicles.

19.   Regarding claim 12, the combined teachings of Strong and Kurami *et al.* do not

explicitly disclose but Jenkins does disclose the commands may initiate from a source

external to the UAV (Col. 1, Lines 43-47).

       Therefore it would have been obvious to one ordinarily skilled in the art at the

time of the invention to supplement the combined teachings of Strong and Kurami *et al.*

and have the commands initiated from a source external to the UAV, as suggested by

Jenkins, in order to allow the remote control of the aircraft.

20.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong

(US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), as applied to

claim 7 above, and in view of Monaco *et al.* (US Patent 6,314,402).

       Regarding claim 15, the combined teachings of Strong and Kurami *et al.* do not

explicitly disclose but Monaco *et al.* do disclose the commands are broken down into

sub-commands (Col. 19, Lines 33-37).

       Therefore it would have been obvious to one ordinarily skilled in the art at the

time of the invention to supplement the combined teachings of Strong and Kurami *et al.*

and have the commands broken down into sub-commands, as taught by Monaco *et al.*

in order for the dialog processing system to have a relevant logical structure.

21.   Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strong

(US Patent 5,384,982), in view of Kurami *et al.* (US Patent 5,208,750), and further in

view of Neumann *et al.* (US Patent 6,735,592).

Regarding claim 16, the combined teachings of Strong and Kurami *et al.* do not

explicitly disclose but Neumann *et al.* suggest the interpreting step is limited to dialog

states common to air traffic control dialogs (*air-traffic control system*, Col. 5, Line 66 –

Col. 6, Line 2; *dialog-states*, Col. 16, Lines 30-31 and 37-39).

Therefore it would have been obvious to one ordinarily skilled in the art at the

time of the invention to supplement the combined teachings of Strong and Kurami *et al.*

by having the interpreting step limited to dialog states common to air traffic control

dialogs in order to avoid supplying the air traffic control dialog processing system with

unnecessary dialog states which would slow down its response time.

Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minerva Rivero whose telephone number is (571) 272-7626. The examiner can normally be reached on Monday-Friday 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Ivars Smits can be reached on (571) 272-7628. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MR 8/1/05

SUSAN MCFADDEN
PRIMARY EXAMINER